



US009411340B2

(12) **United States Patent**
Kamen et al.

(10) **Patent No.:** **US 9,411,340 B2**
(45) **Date of Patent:** ***Aug. 9, 2016**

(54) **CONTROL OF A PERSONAL TRANSPORTER
BASED ON USER POSITION**

(71) Applicant: **DEKA Products Limited Partnership**,
Manchester, NH (US)

(72) Inventors: **Dean Kamen**, Bedford, NH (US);
Richard J. Rosasco, Millersville, MD
(US); **Robert R. Ambrogio**, Manchester,
NH (US); **James J. Dattolo**, Somerville,
MA (US); **Robert J. Duggan**, Strafford,
NH (US); **J. Douglas Field**, Bedford,
NH (US); **Richard Kurt Heinzmann**,
Francetown, NH (US); **Matthew M.**
McCambridge, Madison, WI (US);
John B. Morrell, Bedford, NH (US);
Michael D. Piedmonte, Warrenton, VA
(US)

(73) Assignee: **DEKA PRODUCTS LIMITED
PARTNERSHIP**, Manchester, NH (US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

This patent is subject to a terminal dis-
claimer.

(21) Appl. No.: **14/942,209**

(22) Filed: **Nov. 16, 2015**

(65) **Prior Publication Data**

US 2016/0070269 A1 Mar. 10, 2016

Related U.S. Application Data

(60) Continuation of application No. 14/446,969, filed on
Jul. 30, 2014, now Pat. No. 9,188,984, which is a

(Continued)

(51) **Int. Cl.**
B60Q 1/00 (2006.01)
G05D 1/08 (2006.01)

(Continued)

(52) **U.S. Cl.**
CPC **G05D 1/0891** (2013.01); **A63C 17/01**
(2013.01); **A63C 17/08** (2013.01); **A63C 17/12**
(2013.01);

(Continued)

(58) **Field of Classification Search**

CPC G05D 1/0212; G05D 1/0223; Y02T
10/7258; A63C 17/01

USPC 340/905, 441, 936, 439; 701/93, 117,
701/119; 180/170; 246/182 R

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

880,823 A 3/1908 Redfield
2,224,411 A 12/1940 Smith

(Continued)

FOREIGN PATENT DOCUMENTS

CA 2 580 632 A1 3/2006
CA 2 822 729 A1 3/2006

(Continued)

OTHER PUBLICATIONS

Communication pursuant to Article 94(3) EPC issued in EP Appln.
No. 05809998.7 dated Sep. 23, 2009.

(Continued)

Primary Examiner — Daryl Pope

(74) *Attorney, Agent, or Firm* — McCormick, Paulding &
Huber LLP

(57) **ABSTRACT**

An apparatus controller for prompting a rider to be positioned
on a vehicle in such a manner as to reduce lateral instability
due to lateral acceleration of the vehicle. The apparatus has an
input for receiving specification from the rider of a desired
direction of travel, and indicating means for reflecting to the
rider a propitious instantaneous body orientation to enhance
stability in the face of lateral acceleration. The indicating may
include a handlebar that is pivotable with respect to the
vehicle and that is driven in response to vehicle turning.

20 Claims, 21 Drawing Sheets

